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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/781,512

02/17/2004

Chec Siong Lee

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8791

7590

04/21/2006

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EXAMINER

UNELUS, ERNEST

ART UNIT

PAPER NUMBER

2187

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/781,512	<b>Applicant(s)</b> LEE ET AL.	
	<b>Examiner</b> Ernest Unelus	<b>Art Unit</b> 2187	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

1. The instant application having Application No. 10/781,512 has a total of 24 claims pending in the application; there are 4 independent claims and 20 dependent claims, all of which are ready for examination by the examiner.

### **I. INFORMATION CONCERNING OATH/DECLARATION**

#### **Oath/Declaration**

2. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in 37 C.F.R. 1.63.

### **II. INFORMATION CONCERNING DRAWINGS**

#### **Drawings**

3. The applicant's drawings submitted are acceptable for examination purposes.

### **III. REJECTIONS BASED ON PRIOR ART**

#### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bernasconi et al. (US pat. 6,158,018) in view of Hagan et al. (US pat. 6,158,018).

4. As per claims 1 and 10, Bernasconi discloses a system comprising: an input/output (I/O) controller (**controller 14, fig. 1**) to receive request cycles from a requesting device (**16, fig. 1**); and a patch module (**patching circuitry 22, fig. 1**), the patch module to capture an incoming cycle (**24, fig. 1**) received by the I/O controller and to determine if the captured incoming cycle matches one or more of preprogrammed trigger conditions (**col. 9, lines 51-57, teaches that the trigger-matching logic is the logic that does the matching between the current DSP program address and a break address correspond to a flawed DSP program stored in the ROM 18, such as at section 18b. (col. 9, line 54 teaches the current DSP program address corresponds to the applicant incoming cycle) (see col. 9, lines 51-57); wherein the patch module can work around a captured non-posted request cycle by controlling header information (see col. 9, lines 55-60). In regards to “a completion received from a designated end-device being discard”. Once an incoming cycle (24), received from a requesting device, such as (16), which can also be an end-device, it is considered complete until an error or a fault is found in it; as it go through the patch circuitry 22, it will be discard because of the error or the fault. Therefore, this limitation is inherently met.**

Bernasconi fails to specifically teach specifying whether the I/O controller including a patch module (**patching circuitry 22**) coupled to a completion queue is to be loaded with information from non-posted cycle. However, Hagan suggests interrupt state to be cleared when the entry is posted, the interrupt state being associated with each entry

in the queue (see **abst. and col. 4, lines 47-59**).

Bernasconi's invention and Hagan's invention's are analogous art because they are from the same field of endeavor storing data into queue from a processor. In view of such teaching, at the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip as taught by Bernasconi which includes a DSP and a patching circuitry that's consist of a trigger-matching logic, further include a control logic coupled to the trigger-matching logic is modified to include a completion queue to be loaded with information from non-posted cycle as taught by Hagan.

The motivation for doing so would have been because Hagan teaches that [**"The significant instructions generally translate into increased processing time, slowing the response of the processor determining whether the current queue entry is empty. Therefore, it would be advantageous to have an improvement with an apparatus for reducing the processing overhead for multiple processor or embedded processor architectures in posting events or tasks to a queue"**(col. 1, lines 49-56)].

Therefore, it would have been obvious to combine Hagan and Bernasconi for the benefit of creating a patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip to obtain the invention as specified in claims 1 and 10

5. As per claims 2, 5 and 8, Bernasconi discloses "the system of claim 1,"[see

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**rejection to claim 1 above]** “wherein if a captured non-posted cycle causes a patch trigger (col. 9, lines 51-57, teaches that the trigger-matching logic is the logic that doest the matching between the current DSP program address and a break address correspond to a flawed DSP program stored in the ROM 18, such as at section 18b.) to capture an incoming cycle, which is a non-posted cycle (col. 9, line 54 teaches the current DSP program address corresponds to the applicant incoming cycle).

In regards to “the patch module can load the completion queue with modified and unmodified header information obtained from the captured non-posted cycle”, Bernasconi fails to specifically teach specifying whether the I/O controller including a patch module (**patching circuitry22**) coupled to a completion queue is to be loaded with information from non-posted cycle. However, Hagan suggests interrupt state to be cleared when the entry is posted, the interrupt state being associated with each entry in the queue (see abst. and col. 4, lines 47-59).

Bernasconi’s invention and Hagan’s invention’s are analogous art because they are from the same field of endeavor storing data into queue from a processor. In view of such teaching, at the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip as taught by Bernasconi which includes a DSP and a patching circuitry that’s consist of a trigger-matching logic, further include a control logic coupled to the trigger-matching logic is modified to include a completion queue to be loaded with information from non-posted cycle as taught by Hagan.

The motivation for doing so would have been because Hagan teaches that [**“The**

**significant instructions generally translate into increased processing time, slowing the response of the processor determining whether the current queue entry is empty. Therefore, it would be advantageous to have an improvement with an apparatus for reducing the processing overhead for multiple processor or embedded processor architectures in posting events or tasks to a queue”(col. 1, lines 49-56)].**

Therefore, it would have been obvious to combine Hagan and Bernasconi for the benefit of creating a patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip to obtain the invention as specified in claims 2 and 5.

6. As per claims 3, 6 and 9, Bernasconi discloses “wherein the patch module (patching circuitry22) can send a modified non-posted cycle, (which will be the new cycle), to a destination device (see fig. 1 and col. 9, line 57 to col. 10, line 5).

7. As per claims 4, 7, 13, and 23, Bernasconi discloses “wherein the patch module can return a completion associated with the modified non-posted cycle to the requesting device (16) (see fig. 1 and col. 9, line 57 to col. 10, line 5)

8. As per claims 11 and 21, Bernasconi discloses a method comprising: “receiving an incoming cycle (24) from a requesting device (16); determining if the received incoming cycle matches one or more of preprogrammed trigger conditions (col. 9, lines 51-57, teaches that the trigger-matching logic is the logic that doest the matching between the current DSP program address and a break address correspond to a

**flawed DSP program stored in the ROM 18, such as at section 18b);** determining if the received incoming cycle is a non-posted cycle **(the trigger-matching logic is automatically receiving “non-posted cycle”. The “non-posted cycle” is request that need to be complete, as stated by the applicant in paragraph 0017);** Bernasconi also **discloses,** “if the received incoming cycle matches a trigger condition and is a non-posted cycle **(col. 9, lines 51-57), the patching circuitry does one of following (1) unmodified header information from the captured non-posted cycle (see fig. 1 and col. 9, line 57 to col. 10, line 5), (2) modified header information associated with a modified non-posted cycle, or (3) header information associated with a new cycle generated in response the received incoming cycle.**

Bernasconi fails to specifically teach specifying whether the I/O controller including a patch module **(patching circuitry22)** coupled to a completion queue is to be loaded with information from non-posted cycle. However, Hagan suggests interrupt state to be cleared when the entry is posted, the interrupt state being associated with each entry in the queue **(see abst. and col. 4, lines 47-59).**

Bernasconi’s invention and Hagan’s invention’s are analogous art because they are from the same field of endeavor storing data into queue from a processor. In view of such teaching, at the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip as taught by Bernasconi which includes a DSP and a patching circuitry that’s consist of a trigger-matching logic, further include a control logic coupled to the trigger-matching logic is modified to



include a completion queue to be loaded with information from non-posted cycle as taught by Hagan.

The motivation for doing so would have been because Hagan teaches that [**“The significant instructions generally translate into increased processing time, slowing the response of the processor determining whether the current queue entry is empty. Therefore, it would be advantageous to have an improvement with an apparatus for reducing the processing overhead for multiple processor or embedded processor architectures in posting events or tasks to a queue”**(col. 1, lines 49-56)].

Therefore, it would have been obvious to combine Hagan and Bernasconi for the benefit of creating a patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip to obtain the invention as specified in claims 11 and 21.

9. As per **claims 12, 14, and 22**, Bernasconi discloses “generating a modified non-posted, **which is a new request cycle**, in response to a matched trigger condition (col. 9, lines 9, lines 57 to col. 10, line 5, teaches the that the control logic is taught by Bernasconi’s patching circuitry 22, which carries out the steps of sending a branch op code to the DSP 16 followed by a branch address corresponding to the beginning of a block of corrected DSP program software in the RAM 20 such as in section 20b.); sending the modified non-posted cycle to a destination device (**processor 16 in fig. 1**).

10. As per **claims 15**, Bernasconi discloses “discarding a completion associated with

the new request cycle received from the destination device” (see col. 10, lines 50-60).

11. As per **claim 16**, Bernasconi discloses “a trigger-matching logic (col. 9, lines 51-57, teaches that the trigger-matching logic is the logic that does the matching between the current DSP program address and a break address correspond to a flawed DSP program stored in the ROM 18, such as at section 18b.) to capture an incoming cycle (col. 9, line 54 teaches the current DSP program address corresponds to the applicant incoming cycle) and determine if the captured incoming cycle matches one or more of trigger conditions (see col. 9, lines 51-57); and a control logic (col. 9, lines 9, lines 57 to col. 10, line 5, teaches the that the control logic is taught by Bernasconi’s patching circuitry 22, which carries out the steps of sending a branch op code to the DSP 16 followed by a branch address corresponding to the beginning of a block of corrected DSP program software in the RAM 20 such as in section 20b.) coupled to the trigger-matching logic to select a set of instructions upon detection of at least one matched trigger condition and to execute operations as specified by the selected set of instructions (see fig. 1 and col. 9, line 57 to col. 10, line 5), Bernasconi also discloses, “if the received incoming cycle matches a trigger condition and is a non-posted cycle (col. 9, lines 51-57), the patching circuitry does one of following (1) unmodified header information from the captured non-posted cycle (see fig. 1 and col. 9, line 57 to col. 10, line 5), (2) modified header information associated with a modified non-posted cycle, or (3) header information associated with a new cycle generated in response the received incoming

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cycle.

Bernasconi fails to specifically teach specifying whether the I/O controller including a patch module (**patching circuitry22**) coupled to a completion queue is to be loaded with information from non-posted cycle. However, Hagan suggests interrupt state to be cleared when the entry is posted, the interrupt state being associated with each entry in the queue (**see abst. and col. 4, lines 47-59**).

Bernasconi's invention and Hagan's invention's are analogous art because they are from the same field of endeavor storing data into queue from a processor. In view of such teaching, at the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip as taught by Bernasconi which includes a DSP and a patching circuitry that's consist of a trigger-matching logic, further include a control logic coupled to the trigger-matching logic is modified to include a completion queue to be loaded with information from non-posted cycle as taught by Hagan.

The motivation for doing so would have been because Hagan teaches that [**"The significant instructions generally translate into increased processing time, slowing the response of the processor determining whether the current queue entry is empty. Therefore, it would be advantageous to have an improvement with an apparatus for reducing the processing overhead for multiple processor or embedded processor architectures in posting events or tasks to a queue"**(col. 1, lines 49-56)].

Therefore, it would have been obvious to combine Hagan and Bernasconi for the

benefit of creating a patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip to obtain the invention as specified in claim 16.

12. As per claim 17, Bernasconi discloses “the system of claim 1,”[see rejection to **claim 1 above**] “wherein the trigger-matching logic and the control logic are incorporated within an Input/Output (I/O) chip (**with respect to this limitation, Bernasconi discloses the logic that does the matching between the current DSP program address and a break address take place inside the patching circuitry 22 that is disclosed in fig. 2. The patching circuitry 22 is shown in fig. 1 coupled to a control logic, incorporated within an Input/output (I/O) integrated circuit chip**”. (see fig. 1).

13. As per claims 18 and 20, Bernasconi discloses “wherein the control logic generates a modified non-posted, **which is a new request cycle**, based on the at least one matched trigger condition (col. 9, lines 9, lines 57 to col. 10, line 5, teaches **that the control logic is taught by Bernasconi’s patching circuitry 22, which carries out the steps of sending a branch op code to the DSP 16 followed by a branch address corresponding to the beginning of a block of corrected DSP program software in the RAM 20 such as in section 20b.**); sending the modified non-posted cycle to a destination device (**processor 16 in fig. 1**).

14. As per claim 19, Bernasconi discloses “wherein the control logic (col. 9, lines 9,

lines 57 to col. 10, line 5, teaches the that the control logic is taught by Bernasconi's patching circuitry 22, which carries out the steps of sending a branch op code to the DSP 16 followed by a branch address corresponding to the beginning of a block of corrected DSP program software in the RAM 20 such as in section 20b.) instructs a patch module to whether or not to return a completion associated with the modified non-posted cycle to the requesting device (**processor 16**).

Bernasconi fails to specifically teach specifying whether the I/O controller including a patch module (**patching circuitry22**) coupled to a completion queue is to be loaded with information from non-posted cycle. However, Hagan suggests interrupt state to be cleared when the entry is posted, the interrupt state being associated with each entry in the queue (**see abst. and col. 4, lines 47-59**).

Bernasconi's invention and Hagan's invention's are analogous art because they are from the same field of endeavor storing data into queue from a processor. In view of such teaching, at the time of the invention it would have been obvious to a person of ordinary skill in the art to modify the patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip as taught by Bernasconi which includes a DSP and a patching circuitry that's consist of a trigger-matching logic, further include a control logic coupled to the trigger-matching logic is modified to include a completion queue to be loaded with information from non-posted cycle as taught by Hagan.

The motivation for doing so would have been becauseHagan teaches that [**"The significant instructions generally translate into increased processing time,**

**slowing the response of the processor determining whether the current queue entry is empty. Therefore, it would be advantageous to have an improvement with an apparatus for reducing the processing overhead for multiple processor or embedded processor architectures in posting events or tasks to a queue”(col. 1, lines 49-56)].**

Therefore, it would have been obvious to combine Hagan and Bernasconi for the benefit of creating a patch mechanism used to detect and workaround defects and conditions existing in an integrated circuit chip to obtain the invention as specified in claim 19.

15. As per **claims 12, 14, and 24**, Bernasconi discloses “generating a modified non-posted, **which is a new request cycle**, in response to a matched trigger condition (col. 9, lines 9, lines 57 to col. 10, line 5, teaches **the that the control logic is taught by Bernasconi’s patching circuitry 22, which carries out the steps of sending a branch op code to the DSP 16 followed by a branch address corresponding to the beginning of a block of corrected DSP program software in the RAM 20 such as in section 20b.); sending the modified non-posted cycle to a destination device (processor 16 in fig. 1); and discarding a completion associated with the new request cycle received from the destination device (col. 10, lines 50-60).**

#### **IV. RELEVANT ART CITED BY THE EXAMINER**

16. The following prior art made of record and not relied upon is cited to establish the level of skill in the applicant's art and those arts considered reasonably pertinent to

applicant's disclosure. See MPEP 707.05(c).

17. The following references teach a computer system used to detect, transfer data, workaround defects and conditions existing in an integrated circuit chip.

**U.S. PATENT NUMBER**

US 2004/0237009  
US 6,463,549  
US 6,314,024

**VII. CLOSING COMMENTS**

**Conclusion**

**a. STATUS OF CLAIMS IN THE APPLICATION**

18. The following is a summary of the treatment and status of all claims in the application as recommended by M.P.E.P. 707.07(i):

**a (1) CLAIMS REJECTED IN THE APPLICATION**

19. Per the instant office action, claims 1-24 have received a first action on the merits and are subject of a first action non-final.

**b. DIRECTION OF FUTURE CORRESPONDENCES**

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ernest Unelus whose telephone number is (571) 272-8596. The examiner can normally be reached on Monday to Friday 9:00 AM to 5:00 PM.

**IMPORTANT NOTE**


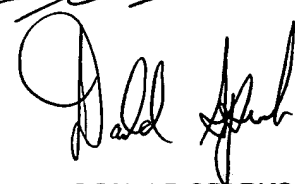
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21. If attempts to reach the above noted Examiner by telephone are unsuccessful, the Examiner's supervisor, Mr. Donald Sparks, can be reached at the following telephone number: Area Code (571) 272-4201.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PMR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217- 91 97 (toll-free).

March 31, 2006

Ernest Unelus  
Examiner  
Art Unit 2187

**DONALD SPARKS**  
**SUPERVISORY PATENT EXAMINER**